International Committee on Technical Interchange for Space Mission Operations and Ground Data Systems
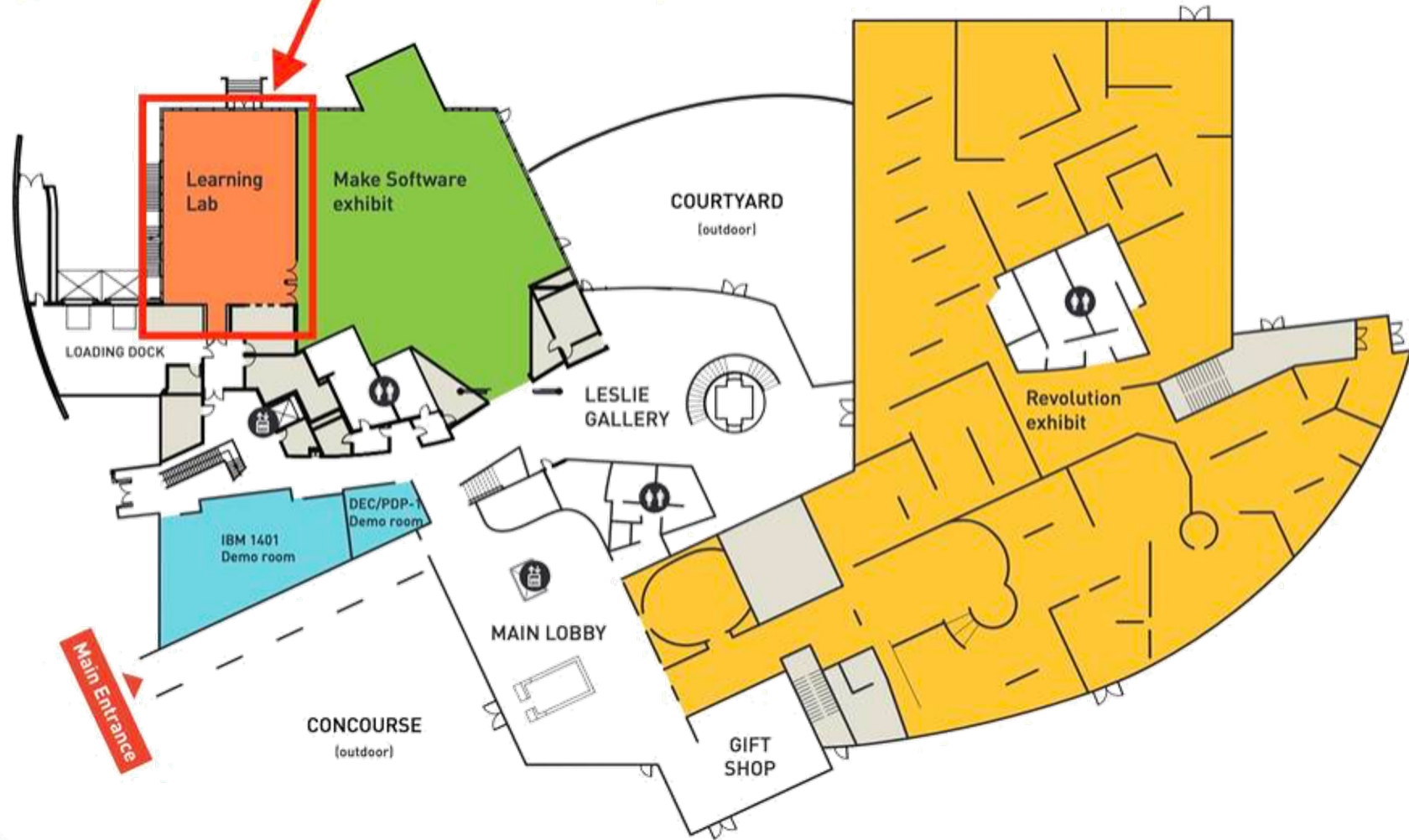
SpaceOps

Welcome and Introduction

Jay Trimble

Computer History Museum – First Floor

Wi-Fi

- Network name: *museum_1st_floor*
- Password: *none required*

Attendees

AIAA	Ronald Freeman	**DLR**	Armin Hauke	**JPL**	Rebecca Castano
			Andrea Casini		Brian Giovannoni
ALTEC	Cesare Capararo		Thomas Mueller		Young Lee
					Marc Sanchez Net
ASI	Simone Pirrotta	**ESA**	Gabriele De Canio		
	Fabio D'Amico		James Eggleston	**NASA**	Matthew D'Ortenzio
			Daniel Fischer		Loretta Falcone
CNES	Gerard Galet		Mario Merri		Safavi Haleh
	Alexis Paillet		Samuel Payler		Ian Howley
			Mauro Pecchioli		Nicholas Kopp
CSA	Christophe Belzile		Maria Spada		Harry Shaw
	Michel Doyon				Mark Shirley
		GMV GmbH	Jeremy Mayer		Jay Trimble
Designbivouac	Danny Stillion				Matthew Vallejo
		JHU APL	Alice Bowman		
			Brian Duncan	**Nissan North America**	Maarten Sierhuis
			Sarah Withee		
				Planet Labs	Lisa McGill
				Telespazio Germany GmbH	Gert Villemos
					Ivan Janes

Workshop Structure

- One day per theme
  - Day 1 - Innovation
  - Day 2 - Lunar Operations
  - Day 3 - Constellations
- Each presentation up to 20 min + 10 min Question & Answer time
- At the end of each day's theme (days 1 and 2)
  - Panel discussion
  - Presenters are the panelists, active group discussion with all attendees, share experience
  - Theme chairs summarize

Agenda

Agenda – Day 1 *Innovation*

8:00-8:30	Arrival, Registration, and Complimentary Breakfast
9:00-9:15	Welcome and Introductions (Jay Trimble/Group).
9:15-9:45	*Innovation in a Space Operations Environment*. Jay Trimble, NASA ARC; Mariella Spada, ESA
9:45-10:15	*Innovation From NASA to Nissan*. Maarten Sierhuis, former NASA employee, current head of Nissan Research Silicon Valley
10:15-10:45	*Leveraging AI and Automation to Achieve Innovation in Space Operations*. ESA
10:45-11:00	Break
11:00-11:30	*Quantum Communications and Computing for Space Exploration: Disruptive, Innovative, or Just Expensive?* Harry Shaw, NASA GSFC
11:30-12:00	*Incremental and Disruptive Innovations in Space Operations at DLR*. DLR
12:00-1:00	Lunch
1:00-1:30	*Innovation in the Era of Commercialization of the International Space Station (ISS) Program*. Howley et al, NASA MSFC
1:30-2:00	*Embracing Internet-Scale Technologies for Space Data Systems*. GMV
2:00-2:30	*Driving Innovation into a System of Services*. ESA
2:30-3:00	*EUMETSAT Approach to Innovation Through Cloud, AI, and Machine Learning Technology*
3:00-3:20	Break
3:20-4:45	Discussion on innovation

Agenda – Day 2 *Lunar Operations*

SpaceOps

8:00-8:30	Arrival, Registration, and Complimentary Breakfast
9:00-9:10	Introduction Fabio D'Amico
9:10-9:40	*Developing Long-Term Lunar Operations Concepts Using Lessons Learned From International Space Station Utilization.* NASA MSFC
9:40-10:10	*Lunar Operations Testing in Analog Facilities: the ESA-DLR Luna Facility*. ESA-DLR
10:10-10:30	Break
10:30-11:00	*Lunar Long-Term Operations and Surface Navigation.* DLR
11:00-11:30	*Position, Navigation, and Timing (PNT) in Lunar Lava Tubes, Permanently Shadowed Regions, and Other Extreme Lunar Environments.* JPL
11:30-12:00	*The Lunar Operations Ground Segment - Key Challenges and ESOC's Roadmap to Address Them*. ESOC
12:00-1:00	Lunch
1:00-1:30	*Spaceship FR's and Contributions to Lunar - Long-Term Operations and Surface Navigation*
1:30-2:00	*REMOTE Joint Lunar Data Center (JLDC) Initiative* IKI RAN
2:00-2:30	*Italian First Deep Space Missions to the Moon and Beyond: ArgoMoon and LICIACube Nanosatellites Ready to be Operated.* ASI
2:30-3:00	*Arrival, Registration Overview of Mission Planning for the Volatiles Investigating Polar Exploration Rover.* NASA ARC
3:00-3:20	Break
3:20-4:00	Discussion

Agenda – Day 3 *Constellations & Tours*

SpaceOps

8:00-8:30	Arrival, Registration, and Complimentary Breakfast
9:00-9:45	*How to Effectively Operate 100's of Satellites: Lessons Learned From Planet Mission Operations.* Lisa McGill, Planet
9:45-10:30	*HelioSwarm Mission Operations Development Approach*. NASA
10:30-10:45	Break
10:45-11:15	*REMOTE The Power of Design Thinking and Innovation.* Danny Stillion, former IDEO
11:15-11:45	*Enabling a Larger Deep Space Mission Suite: A Deep Space Network Queueing Antenna for Demand Access*. JPL
11:45-1:00	Lunch
1:00-1:30	Motor to Visitor Badging Office - All tour participants are required to get a visitor's badge
1:30-4:00	Tour of Ames Research Center

Speakers and Presenters

Invited Speakers

Lisa McGill, Planet Labs
Maarten Sierhuis, Nissan North America
Danny Stillion, Designbivouac

Presenters

Andrea Casini, German Aerospace Center (DLR)
Rebecca Castano, Jet Propulsion Laboratory (JPL)/Caltech
Gabriele De Canio, European Space Agency (ESA)
Matthew D'Ortenzio, NASA Ames Research Center
Tristan Edwards, European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
Loretta Falcone, NASA Ames Research Center
Daniel Fischer, European Space Agency (ESA)
Armin Hauke, German Aerospace Center (DLR)
Nicholas Kopp, NASA Marshal Space Flight Center International Space Station Payload Operations
Jeremy Pierce Mayer, GMV's German aerospace subsidary GmbH
Alexis M. Paillet, National Centre for Space Studies (CNES)
Mauro Pecchioli, European Space Agency (ESA)/European Space Operations Centre (ESOC)

Simone Pirrotta, Italian Space Agency
Marc Sanchez Net, Jet Propulsion Laboratory (JPL)
Harry Shaw, NASA, Goddard Space Flight Center
Mark Shirley, NASA Ames Research Center
Jay Trimble, NASA Ames Research Center

Matthew Vallejo, NASA Marshall Space Flight Center.
Sara Withee, John Hopkins University Applied Physics Lab

Thank You!

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